

Remarks:

Claims 1, 3-4, 14, 16-17, 24, 26, and 28 were previously pending with claims 1, 14, and 24 being independent. Claim 1 is currently amended and claims 14, 16-17, 24, 26, and 28 are cancelled, therefore claims 1, and 3-4 are currently pending with claim 1 being independent. Claim 1 has been amended to include the limitation of “on a pervasive computing device.” Pervasive computing is defined and described in paragraphs 0002 through 0007 of the specification and the change derives support from the same location. Claim 1 is also amended to change “imperative language” to “JAVA” in part d. This change is supported because JAVA is simply a specific example of an imperative language, as described in paragraph 0044 of the specification.

In this Amendment, Applicant has amended claim 1 and canceled claims 14, 16-17, 24, 26, and 28 from further consideration in this application. Applicant is not conceding that the subject matter encompassed by claims 14, 16-17, 24, 26, and 28, prior to this Amendment is not patentable over the art cited by the Examiner. Claim 1 was amended and claims 14, 16-17, 24, 26, and 28 were canceled in this Amendment solely to facilitate expeditious prosecution by the Examiner. Applicant respectfully reserves the right to pursue claims, including the subject matter encompassed by claims 14, 16-17, 24, 26, and 28, as presented prior to this Amendment and additional claims in one or more continuing applications.

The Objection to the Specification

Claim 24 was objected to for failing to provide proper antecedent basis for the claimed subject matter. This claim was cancelled to facilitate expeditious prosecution of the allowable subject matter. As such, the objection no longer applies to the current application.

The Rejection of Claims under 35 USC § 112

Claims 1 and 14 were rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. Specifically, the Examiner states “there is not relationship [sic] of step d.” Claim 1 has been amended to change “imperative language” to “JAVA” to establish the required structural connections by making it clearer that the executable statements are the JAVA statements recited in step c. Therefore, the necessary structural connections are present in the claims, as amended.

A person having ordinary skill in the art would understand the method as stated in claim 1. In the context of a computer-implemented method, the four steps would logically be performed by one computing device in an ordered listing of code segments as shown, for example. Therefore Applicant submits that claim 1, as amended, contains no deficiency with respect to § 112.

The Rejection of Claims under 35 USC § 101

Claims 1-25, 27 and 28 were rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter. Claim 1 has been amended to include the limitation of being performed on a “pervasive computing device.” No additional basis for this rejection has been provided by the Examiner, however, and there is no precedent known to the Applicant that software is per se non-statutory subject matter. To the contrary, computer software is patentable subject to satisfaction of the machine-or-transformation test. In re Bilski, ___ F.3d ___, *10, *23 (Fed. Cir. 2008) (en banc). A method recites statutory subject matter under § 101 when: 1) “it is tied to particular machine or apparatus”; or 2) “it transforms a particular article into a different state or thing.” Id. at *10.

Electronic transformation of data is sufficient to transform a particular article into a different state or thing so long as the claim does not wholly preempt the fundamental principle. *Id.* at * 26.

Here, both prongs of the test are met. First, as recited in amended claim 1, the method is tied to a “pervasive computing device.” Second, the method also transforms an article into a different state or thing because the SQL queries are “transformed into intermediate tree representation[s] corresponding to [a] declarative language function” and the declarative language representations of SQL queries are “convert[ed]. . . to a plurality of JAVA statements.” The claims also do not wholly preempt the fundamental principle because the claim is limited in scope to a “method of managing a relational database *on a pervasive computing device*” and therefore would not preempt the use of the method mentally or the same method implemented on a machine other than a “pervasive computing device”. This invention as claimed satisfies the machine-or-transformation test and is therefore patentable.

The Rejection of Claims under 35 USC § 102

Claims 1, 3, 14, 16, 24, 26 and 28 were rejected under 35 U.S.C. 102(e) as being anticipated by Brandow et al. (US 6938041, hereafter Brandow). Brandow teaches a methodology for creating Java-based database control objects. Applicant respectfully disagrees that Brandow anticipates the current invention.

Brandow does not anticipate the current invention because Brandow does not disclose all the elements present in the current invention. Specifically, Brandow does not teach “associating at least one declarative language function with the query terms by converting SQL to an intermediate tree representation corresponding to the declarative language function,” as recited in claim 1. Brandow

discloses receiving SQL statements from a client, parsing the statement into a query tree using conventional parsing methodology, normalizing the query, “convert[ing] the query tree into a set of instructions suitable for satisfying the query”, and eventually executing the query. Brandow at col.7 ls. 31-67, col. 8 ls. 1-9. Brandow does parse the SQL statement into a query tree, but the query terms are not “associat[ed with] at least one declarative language function” nor does the tree representation “correspond[] to the declarative language function.” Brandow at col. 7 ls. 37-41. For this reason, Brandow does not disclose all the elements of the current invention and thus does not anticipate the current invention under § 102.

Because the remaining claims depend on claim 1, they are likewise not anticipated under § 102.

The Rejection of Claims under 35 USC § 103

Claims 4 and 17 were rejected under 35 U.S.C. 1023(a) as being obviated by Brandow in view of Simon Peyton Jones et al. “Bridging the gulf: a common intermediate language for ML and Haskell”, Copyright 1998 ACM (hereafter Simon). Simon teaches attempts at building an intermediate language for Haskell and ML compilers. Simon discusses converting Haskell and ML into an intermediate language that could be used to create a unified compiler for both languages. In doing so, Simon describes two attempts at such a language and the difficulties and advantages of each. The § 103 rejections are improper because the prior art references do not contain all the elements of the current invention, Simon teaches away from the present invention, Simon is non-analogous art, and Simon is not enabling for the present art.

The Prior Art Does Not Contain All the Elements of the Current Invention

First, the § 103 rejection is improper because not all the limitations of the claims can be found in Brandow alone, Simon alone, or in combination. Brandow is missing the elements set forth above with respect to the anticipation rejection. In addition, Simon does not teach “interpreting [SQL] queries by associating at least one declarative language function” nor does it teach “an intermediate tree representation corresponding to the declarative language function.”

Simon Teaches Away from the Present Invention

It is improper to combine references where the references teach away from their combination. MPEP § 2145; KSR v. Teleflex, 2007 WL 1237837 at *12. References teach away where the combination or modification that would result in the claimed invention would render the reference in question inoperable for its intended purpose. In re Gordon, 733 F.2d 900 (Fed. Cir. 1984); In re Fritch, 972 F.2d 1260, 1265-66 (Fed. Cir. 1992); Tec Air Inc. v. Denso Mfg. Michigan Inc., 192 F.3d 1353, 1359-60 (Fed. Cir. 1999). A reference also teaches away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference. In re Kahn, 441 F.3d 977, 990 (Fed. Cir. 2006), cited with approval in KSR, 2007 WL 1237837 at *13.

Here, the combination of Simon teaches away from the present invention. Simon teaches a compiler design, utilizing a common intermediate language, which compiles code from two distinctly different languages. Haskell is considered a “lazy” language. See Simon at 49 § 1 ¶ 1. ML is considered a “strict” language. Id. As understood by a person having ordinary skill in the art (a “skilled artisan”), to create a compiler that unifies two different languages would be larger, more-complex, and more computationally and resource intensive than a single-language compiler design.

This is of no consequence to Simon because compilers are traditionally used on desktop or server-class computing devices where memory and computational resources are in relative abundance. However, on pervasive computing devices, memory and computational resources are scarce, as described in paragraph 0007 of the specification. A skilled artisan, upon reading Simon, would immediately be discouraged from following the path set out by Simon because the memory and computation resources required by Simon are contradictory to the constraints of the pervasive platform. Therefore, Simon teaches away from the current invention.

Simon is Non-Analogous Art

Next, the § 103 rejection is improper because it is non-analogous art. One inquiry to be made in rendering an obviousness determination using the Graham factual inquiries, is to determine the scope and content of the prior art. A determination of the scope and content of the prior art involves distinguishing analogous art from non-analogous art. See In re Clay, 966 F.2d 656, 658, 23 U.S.P.Q.2d 1058 (Fed. Cir. 1992). Only analogous art should be used when making an obviousness determination. To be considered analogous art, a reference must satisfy one of two criteria. Id. at 659–59. First, a reference is considered analogous if it is within the same field of endeavor as the claimed invention, regardless of the problem addressed. Id. Alternatively, even if a reference is not within the inventor's field of endeavor, the reference may still be analogous if it is reasonably pertinent to the particular problem with which the inventor is involved. Id. That is, a reference is analogous art if "it is one which, because of the matter with which it deals, logically would have commended itself to [the] inventor's attention in considering his problem." Id.; see also KSR, 550 U.S. ___, 82 U.S.P.Q.2d at 1397.

Simon and the current invention are not in the same field of endeavor. Simon teaches compiler design. The current invention teaches “[a] method of managing a relational database on a pervasive computing device”. Compiler design requires knowledge of formal grammars and machine code optimization techniques. In contrast, managing relational databases on pervasive computing devices requires of optimizing code for low memory and low computation-power environments, knowledge of relational databases and, likely, user interface design. Obviously these are not the same field of endeavor because each requires specific knowledge not shared with the other.

Simon would also not have commended itself to the inventor’s attention given his problem. The current invention is managing relational database on pervasive devices. When developing applications for use in a pervasive environment, applications must use as little memory and processing capabilities as possible, as described in paragraph 0007 of the specification. Haskell teaches an intermediate language to create a common compiler for Haskell and ML. As would be understood by a skilled artisan, a generalized design to bridge two different languages, such as advocated in Simon, would increase memory and computation demands on the host device and create additional code complexities. Upon reading Simon, a skilled artisan would be immediately discouraged from combining Simon with any reference to address a problem directed to pervasive computing devices because additional memory and computation power would be obviously required. Therefore, a Simon is not analogous art because it is not in the same field of endeavor and it would not have commended itself to the inventor’s attention in considering his problem.

Simon is Not Enabling for the Purpose of the Current Invention

Additionally, Simon does not teach a completed intermediate language, nor a completed compiler design that a skilled artisan in developing database management systems for pervasive devices could make and use. “A conclusion of obviousness requires that the reference(s) relied upon be enabling.” MPEP § 2145. A reference is enabling when it enables a person of ordinary skill in the art to make and use the claimed invention without resorting to undue experimentation. See In re Brown, 477 F.2d 946, 177 USPQ 691 (CCPA 1973); In re Ghiron, 442 F.2d 985, 169 USPQ 723 (CCPA 1971). Simon requires “[s]ome work to extend it to a practical [intermediate language].” Simon at 60. The intermediate language generated from Simon has no support for recursive data types and case expressions. Id. In addition, “a proof of type soundness is needed” before Simon is used as a practical intermediate language because “its soundness is not obvious.” Id. To their surprise, even the authors of Simon stated the design of their intermediate language was not “relatively straight-forward”. Id. at 49. Addition of recursive data types, and proofs of language soundness are not within the capabilities of one having ordinary skill in the present art of database management systems when even the authors of Simon found their design challenging. For that reason, the intermediate languages of Simon are not enabled for use by a skilled artisan.

Therefore, Applicant submits that the § 103 rejections are improper because: 1) the references do not contain all the elements of the current invention; 2) Simon teaches away from the current invention; 3) Simon is non-analogous art; and 4) Simon does not teach a practical language that is enabled for a skilled artisan.

For at least the reasons set forth above, applicant respectfully submits that claims 1 and 3-4 are now in allowable condition and requests a Notice of Allowance. In the event of further questions, the Examiner is urged to call the undersigned. Any additional fee which is due in connection with this amendment should be applied against our Deposit Account No. 19-0522.

Respectfully submitted,

By: /Scott R. Brown/
Scott R. Brown, Reg. No. 40,535
HOVEY WILLIAMS LLP
10801 Mastin Blvd., Suite 1000
84 Corporate Woods
Overland Park, KS66210
(913) 647-9050

ATTORNEYS FOR APPLICANT(S)